T&E AGENDA: 05-05-08
ITEM: e

CITY OF SAN JOSE
CAPITAL OF SILICON VALLEY

Memorandum

TO: TRANSPORTATION & ENVIRONMENT COMMITTEE

FROM: John Stufflebean
Peter Jensen

SUBJECT: **SUSTAINABLE ENERGY POLICY AND ACTION PLAN ANNUAL REPORT 2008**

DATE: 04-23-08

Approved _____ Date 4/28/08

RECOMMENDATION

Accept this report highlighting the achievements detailed in the attached 2007 Sustainable Energy Policy and Action Plan report.

OUTCOME

To update the City Council on recent and planned activities that further the implementation of the Sustainable Energy Policy and energy activities related to the goals of the Green Vision.

EXECUTIVE SUMMARY

The attached report details the 2007 successes and accomplishments of the City's Sustainable Energy Action Plan.

BACKGROUND

On April 1, 2003, Council adopted the Sustainable Energy Policy and corresponding Action Plan. Within that Policy, staff was directed to report on the status of implementation and attainment of the adopted Policy and action plan on an annual basis.

The goals of the San José Sustainable Energy Policy are to:

- Lead by example in pursuing the most efficient use of energy in City facilities and activities.
- Explore opportunities to improve energy reliability, supply and price stability to meet current and future needs.
- Promote collaboration on energy issues.

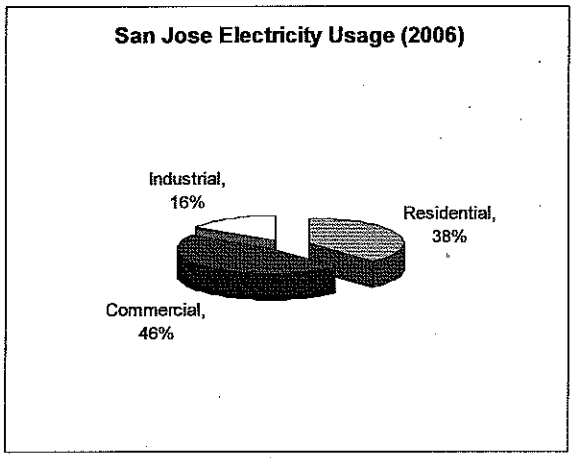
- Promote and achieve a cleaner and healthier environment, including improving air quality and reducing greenhouse gas emissions.
- Encourage the development and use of renewable energy sources and alternative fuels.

Subsequently, the Council adopted the Green Vision, wherein specific goals related to energy efficiency and the use of renewable energy were adopted.

ANALYSIS

Energy Use in San José

Citywide, the total electrical usage by all sectors is almost 5 billion kilowatt hours on an annual basis (2006 data). For municipal operation, the City used 135 million kWh in 2007. As seen in the accompanying graphic, the commercial sector is the largest user of electricity.



The Green Vision Goal for energy efficiency is to reduce per capita energy use by 50% within 15 years. Staff estimates that meeting the Green Vision goals will require city-wide energy use reductions (kWh and therms) of almost 5% per year for the next 15 years. It will also require a 17% cumulative reduction in municipal energy use by the end of 2011. Building and renovating City facilities to the LEED Silver standard contributes to this goal by exceeding the state energy code by at least 14%.

Successes To Date

The attached 2007 Annual Report provides a summary of the energy activities completed by the City in the past year. Some highlights include the following successes:

Municipal Electricity Savings The General Services Department has historically tracked energy usage at the City's twelve largest facilities, and a number of small accounts such as libraries, community centers, and service yards. Their latest figures indicate that since 2001 (original baseline), the City has reduced energy use by over 237M kWh (20.7%) which translates to $30M in avoided energy cost expenditures. This figure is the equivalent of removing 255,000 tons of Carbon Dioxide Equivalent and equates to the removal of annual greenhouse gas emissions from 46,600 passenger vehicles.

Municipal Facilities—Energy Efficiency Projects To date, analyses have identified over $287,000 in annual energy cost savings from implementing energy efficiency projects. In 2007,

the City funded an Energy Officer position through PG&E energy rebates received as a result of the municipal LED traffic signal conversion project. The goal of the Energy Officer is to ensure that energy efficiency measures are in place at City facilities, reduce operation and maintenance costs and environmental impacts, as well as to improve comfort.

In FY 2007-08, Phase I of the energy program began. Working with the Association of Bay Area Governments Energy Watch program and Pacific Gas & Electric, building audits reports were conducted at selected City facilities. Initial funding was on hand to complete most of the Phase I projects. Phase I project costs are expected to be almost entirely reimbursed by $100,000 in anticipated rebates from ABAG Energy Watch and PG&E. Implementation of these projects is expected to be completed by June 2008.

Current Projects –Phase I (completion date 6/08)	*Estimated Project Cost*	*Annual estimated energy cost savings*	*Potential Rebate*	*Estimated Payback*
Mabury Service Yard	*$15,320*	*$9,344*	*$5,454*	*1 year*
1st phase Fire projects (5)(#20,18,26,4,9)	*$ 30,101*	*$ 13,724*	*$8,933*	*1.3 years*
2nd phase Fire projects (6)(#29,11,6,22,18,8)	*$8,222*	*$3,661*	*$2,230*	*1.3 years*
Municipal Pool (Fair Swim Center)	*$36,000*	*$36,681*	*$26,262*	*0.5 years*
Community Centers (Almaden, Evergreen)	*$17,500*	*$23,908*	*$7,758*	*0.5 years*
IT Computer Management Project	*$0*	*$200,000*	*$50,000*	*immediate*
TOTAL	*$107,143.00*	*$287,318.00*	*$100,637.00*	

Public Facilities Energy & Green Building Improvement Project The Environmental Services Department submitted a **Public Facilities Energy & Green Building Improvement Project** under the Community Development Block Grant 2008-09 funding cycle. This proposal would principally address energy and green building at facilities that serve San José residents located in low and moderate income areas. Funding of close to $500,000 is being recommended for comprehensive green building improvements including: energy efficiency, water use reduction, cool/green roof, photovoltaic installation (solar electricity), and drought tolerant landscaping at ten City facilities.

San José/Santa Clara Water Pollution Control Plant activities The Plant appeared for the first time on the U.S. Environmental Protection Agency's Top 10 Local Government List of the largest green power purchasers in EPA's Green Power Partnership. The Plant was recognized for its voluntary purchase of nearly 45 million kilowatt-hours of green power annually (biogas produced onsite and purchase of Newby Island landfill gas). Based on national average utility sub-region emission rates, the EPA estimates that the Plant's green power purchase of nearly 45

million kilowatt-hours was equivalent to avoiding the carbon dioxide emissions of more than 5,000 passenger cars each year.

Energy Efficiency for the Low Income Community With the Calpine/Bechtel agreement energy conservation funds, the Housing Department provided energy efficiency improvements and *Energy Star* appliances to 178 Extremely Low-Income households (48% of funds), 135 Very Low-Income (37%), and 57 Low-Income households (15%). It is worth highlighting that 85% of the "Energy Saving" funds went to 192 households earning at or below 50% or the area median household income.

Energy Generating Technologies That Use Municipal Solid Waste Several initiatives currently underway will drive staff analysis of options for sustainable energy production technologies. The City's Zero Waste Planning effort, the San José/Santa Clara Water Pollution Control Plant (Plant) Master Plan, and the City's Sustainable Energy Action Plan are interconnected components of this initiative. Progress on these issues will continue to be provided to Council as each of these efforts matures, and could include a Request for Proposals (RFP) for an alternative technology energy facility to be located on Plant lands that uses selected streams of municipal solid waste (MSW).

San José as a Solar City The City of San José is the only city in the United States to have received both a Department of Energy Solar Showcase Award and a Solar America City designation. As a Solar Showcase, the City has received expert technical assistance assessing eight City facilities for their solar potential, financial opportunities and bid solicitation development. As a Solar City, the City will join with the twenty-five other cities in the United States. San José's program will focus on working with community stakeholders in preparing a solar plan for the community that will address financial, permitting, workforce development and other key issues. A grant of $200,000 was provided as part of the Solar City award.

Transportation Infrastructure and Roadway Lighting The Department of Transportation issued a Request for Information for a "Green Mobility Showcase Project" which sought industry responses for advanced LED streetlight systems that could utilize power credits offset by a sidewalk "cooling station" powered by solar electric. The response was positive and DOT, Redevelopment Agency and Finance are now working to have the first phase of this project—controllable streetlights—installed by the end of May. The City's Green Vision calls for all streetlights to be energy-neutral by 2022.

Airport Solar Project: Airport staff, with interdepartmental and consultant support, has released a request for proposal for the operation of a 1 megawatt solar photovoltaic generating system located on City Airport property. This project will utilize a power purchase agreement wherein the City would purchase power generated at a fixed price.

Future Opportunities

In addition to the goals of the Sustainable Energy Policy, the Green Vision provides specific goals related to energy efficiency and the use of renewable energy. Those goals are to:

- Reduce Per Capita Energy Use by 50%
- Receive 100% of Our Electrical Power From Clean, Renewable Sources

In the next year, the following principles will guide the activities of staff:

- *Leading by Example;*
- *Partnerships and Advocacy;*
- *Engaging the Community; and*
- *Facilitating the Community Adoption of Renewable Energy*

These principles, and associated initiatives, were included in the documents presented to Council for the Green Vision implementation work plan.

Initiatives will continue on energy efficiency and solar activities for City facilities. Other near-term actions include encouraging more deployment of solar energy within the City. Longer-horizon actions will be based on emerging technologies, such as energy generated from waste, and other renewable technologies.

EVALUATION AND FOLLOW UP

Energy reduction and solar installation goals are integrated into the Environment and Utilities Services City Service Area Business Plan. Additional performance measures are being developed for the Green Vision goals related to energy efficiency and renewable resources. Those preliminary performance measures include:

Goal 2. Reduce per capita energy use by 50%	• Baseline, Interim and Final Energy use goals for per capita energy consumption (targets under development)
Goal 3. Receive 100% of electrical power from clean, renewable sources	• Number and diversity of renewable energy systems implemented within San José • Amount of energy provided by renewable energy installations enabled by City of San José • Total % of electrical power derived from renewable sources

PUBLIC OUTREACH/INTEREST

Public outreach activities on the City's energy efficiency and renewables programs have occurred through the Green Vision development, the Solar Summit convened by the Mayor, and the education and outreach component of the Local Government Partnership Program.

COORDINATION

This memorandum has been coordinated with the Departments of General Services, Finance, Public Works, Airport, Transportation, Finance, Budget, Planning, Building and Code Enforcement, Economic Development, Housing, Information Technology, Parks, Recreation and Neighborhood Services, Police, Fire, and the San José Redevelopment Agency.

FISCAL/POLICY ALIGNMENT

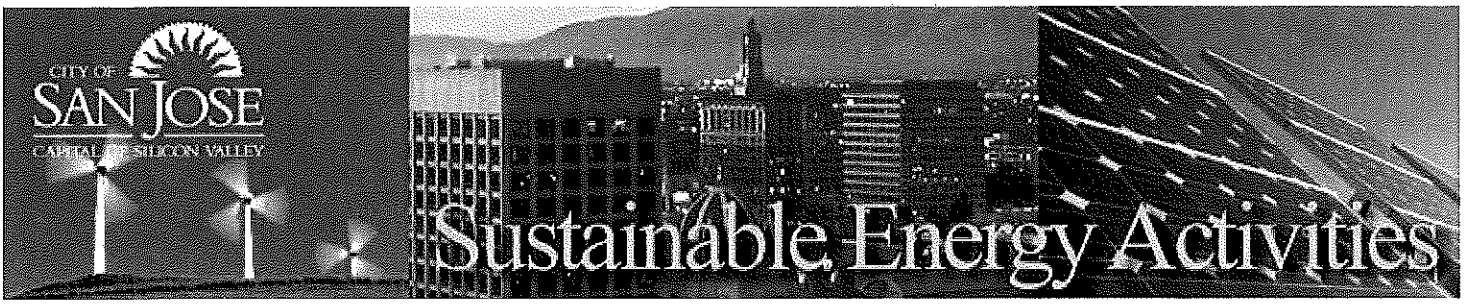
This item is consistent with Council approved Green Vision, and Budget Strategy Memo General Principle #2, "We must focus on protecting our vital core City services."

JOHN STUFFLEBEAN
Director, Environmental Services Department

PETER JENSEN
Director, General Services

For questions please contact Mary Tucker, Supervising Environmental Services Specialist, at (408) 975-2581.

Attachment



2007 City of San José Sustainable Energy Policy Report

April 2008

CITY OF
SAN JOSE
CAPITAL OF SILICON VALLEY

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INTRODUCTION

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Subsequently, the Council adopted the Green Vision, wherein specific goals related to energy efficiency and the use of renewable energy were adopted. Those goals are that by 2022, the City will:

- Reduce Per Capita Energy Use by 50%
- Receive 100% of Our Electrical Power From Clean, Renewable Sources

This report provides a status report on accomplishment to date and proposed action plans for FY 2008-09

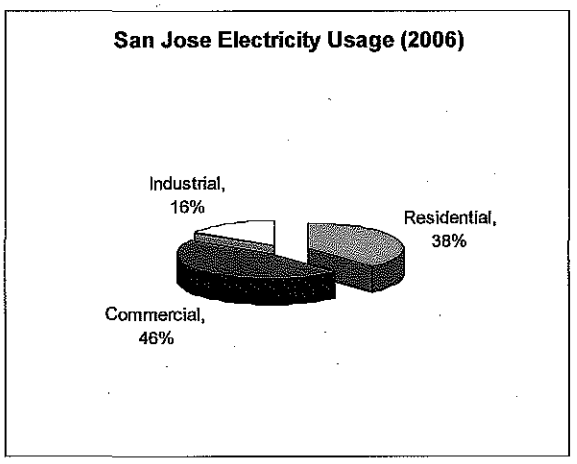
Supportive City Policies

There are many supportive policies throughout the City that guide the activities of the City's Sustainable Energy activities. In addition to the recently adopted *Green Vision*, the following policies offer support and integration:

- Green Building Policies
- Environmentally Preferable Procurement Policy
- Urban Environmental Accords

In addition, within the current General Plan, the Sustainable City Policy provided guidance for San Jose as a Sustainable City—a city designed, constructed, and operated to minimize waste, efficiently use its natural resources and to manage and conserve them for the use of present and future generations. More recently, Council confirmed that the Sustainable City Policy, as one of the current seven major strategies, will continue to represent the appropriate framework for the future growth of the City and the Envision 2040 General Plan Update effort.

Energy Use in San Jose



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2007-08 SUCCESSES

The following provides a summary of the activities conducted and achieved to date.

Lead by Example - Energy Policy Goal I

Overall Energy Reduction in City Facilities since 2001

Energy Use in City of San José—Municipality

The General Services Department has historically tracked energy usage at the City's twelve largest facilities, and a number of small accounts such as libraries, community centers and service yards. Their latest figures indicated that, since 2001 (original baseline), the City has achieved close to $30M in avoided energy cost expenditures, which translates to a 20.7% reduction compared to the established baseline, with over 237M kWh reduced, This figure amounts to 255,000 tons of of Carbon Dioxide Equivalent removed since 2001, equating to the removal of annual greenhouse gas emissions from 46,600 passenger vehicles.

Energy Efficiency savings (cumulative since 2001 baseline)

- $29,800,000 in avoided expenditures
- 20.7% reduction compared to the established baseline (2001)
- 238,000,000 kWh reduced

Energy Efficiency—Community Services and City Facilities Projects

Municipal Facilities—Energy Efficiency Projects

To date, analyses have identified over $287,000 in annual energy cost savings from implementing energy efficiency projects. In 2007, the City funded an Energy Officer position through PG&E energy rebates received as a result of the municipal LED traffic signal conversion project. The goal of the Energy Officer is to ensure that energy efficiency measures are in place at City facilities, reduce operation and maintenance costs and environmental impacts, as well as to improve comfort.

In Fy2007-08, Phase I of the energy program began. Working with the Association of Bay Area Governments Energy Watch program and Pacific Gas & Electric, building audits reports were conducted at selected City facilities. Initial funding was on hand to complete most of the Phase I projects. Phase I project costs are expected to be almost entirely reimbursed by $100,000 in anticipated rebates from ABAG Energy Watch and PG&E. Implementation of these projects is expected to be completed by June 2008.

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ENERGY STAR Low Carbon IT Campaign

The City joined the U.S. Environmental Protection Agency's ENERGY STAR Low Carbon IT Campaign. The City has pledged to continue to reduce the carbon footprint of our IT operations through ongoing purchase of ENERGY STAR equipment, as well as through the reduction of electric consumption at computer and employee workstations through the enhanced use of computer power management features in the operating systems used by our organization. This power management project will include an estimated 6,000 computers and monitors across all departments. Through interdepartmental collaboration (IT & ESD), energy saving settings have been activated in computers citywide which will result in over $200,000 a year in energy savings and reduce approximately 250 tons of carbon dioxide annually.

ENERGY STAR Partnership

The City of San José became a member of the U.S. Environmental Protection Agency's Energy Star Partnership, a voluntary program that makes it easy to improve the energy performance of the City's building portfolio as a means to protect the environment that sustains the well being of our community and economy. Through the continuous improvement of our energy performance, the City is currently developing an organization-wide energy management approach that will help us achieve the goals of the City's Green Vision, enhance our financial health and aid in preserving the environment for future generations. In partnership with ENERGY STAR, the Environmental Services Department will measure and track the energy performance of applicable City facilities by using a variety of tools, including software provided by EPA ENERGY STAR. Through this Partnership, the City will be recognized on the ENERGY STAR web site as a "Partner" and as a supporter of the ENERGY STAR Challenge. To be eligible for additional recognition, ESD will share with EPA our progress and milestone achievements.

Community Development Block Grant (CDBG) Program

The Environmental Services Department submitted a **Public Facilities Energy & Green Building Improvement Project** under the CDBG 2008-09 funding cycle. This proposal would principally address energy and green building at facilities that serve San Jose residents located in low and moderate income areas. A funding amount of close to $500,000 is being recommended for comprehensive green building improvements including: energy efficiency, water use reduction, cool/green roof, photovoltaic installation (solar electricity) and drought tolerant landscaping at the following City facilities:

- FIRE STATIONS: 1, 3, 16
- COMMUNITY CENTERS: Northside, St. James, Gardner, Alum Rock Youth Center, Hank Lopez, Washington Youth Center
- LIBRARIES: Alviso

New City Hall

- **Lighting system upgrades at City garages.** The City Hall parking garage received a major lighting retrofit that will result in an estimated energy savings of 113,000 kilowatt hours per year.
- **Demand Response** General Service and ESD have collaborated with PG&E to enroll City Hall in PG&E's Demand Response program. Our participation in this program with help maintain the reliability of the electric grid during peak summer hours, provide downward pressure on electric rates in California, assist General Services in management of on-peak electric costs, create a revenue stream not previously realized by the City, and contribute to reductions in green house gas emissions. ESD and General Services are working collaboratively to determine additional facilities to be enrolled in the PG&E Demand Response program.

- City Hall building management staff has collaborated with the Environmental Services Department in calibrating settings associated with a photocell pilot project which is planned for implementation throughout the facilities pending approval of budget resources.
- Additional daylighting projects are in progress at the Central Service Yard, Solari Community Center and are also planned for the new Roosevelt Community Center.

San Jose/Santa Clara Water Pollution Control Plant activities

- The Plant completed a variable frequency drive replacement project for the Transmission Pumping Station, with estimated annual energy savings of 152,000 kWh. The Plant received a rebate check of $97,024 from PG&E for this project.
- Currently upgrading the plant air compressor system. Plant staff is working with PG&E to capture rebates for energy savings, which are estimated to be around $55,000.
- The Plant appeared for the first time on the U.S. Environmental Protection Agency's Top 10 Local Government List of the largest green power purchasers in EPA's Green Power Partnership. The Plant was recognized for its voluntary purchase of nearly 45 million kilowatt-hours of green power annually (biogas produced onsite and purchase of Newby Island landfill gas). Based on national average utility sub-region emission rates, the EPA estimates that the Plant's green power purchase of nearly 45 million kilowatt-hours was equivalent to avoiding the carbon dioxide emissions of more than 5,000 passenger cars each year.
- The proposed fuel cell project at the Plant has been put on hold. On October 16, 2007, Council awarded the design-build contract and a 5-Year term maintenance service contract to the lowest responsive contractor. However, the contractor refrained from executing the contract, indicating that they would not meet the terms of the contract. Staff will now explore other approaches to implementing this project, such as the use of a Power Purchase Agreement.

Department of Transportation Projects

The Department of Transportation issued a Request for Information February 2008 to gather information about technologies available to support a Green Mobility Showcase in support of the San Jose Green Vision mobility goal. Technologies included in the solicitation for information included: solar powered cooling stations, LED Streetlights, advanced streetlight poles, plug-in stations for electric and hybrid-electric vehicles, and devices for the control & monitoring of exterior lighting.

The response was positive and DOT, Redevelopment Agency, and Finance are now working to have the first phase of this project—controllable streetlights—installed by the end of May. The City's Green Vision calls for all streetlights to be energy-neutral by 2022.

The City of San José and the Santa Clara County Cities Association both requested assistance from PG&E and the California Public Utilities Commission to establish viable rate schedules for LED streetlight technology. As with most jurisdictions, the majority of streetlights in San Jose are not metered, so electric rate schedules must be established in order to measure potential costs and benefits of deploying this technology. Establishment of these rate schedules will both help the City in its planning process and improve the potential market for the products of local LED manufacturers and vendors.

DOT and ESD are working together to evaluate energy efficiency measures and find funding for projects at a number of municipal parking garages and lots. Other DOT projects include:

- Conversion of all City's Traffic Signals to LED (Light Emitting Diode) with a projected annual energy cost savings of close to $1.5M.
- Retrofitted 210 up-light fixtures for palm trees on the medians for West San Carlos Street from McEvoy to Highway 88. Metal halide fixtures (100 watt) were replaced with 42 watt LED fixtures.
- Retiming of traffic signals is saving citizens an estimated 525,000 gallons of fuel per year and eliminates 73,000 pounds of toxic vehicle air emissions annually.

Airport

Airport staff, with interdepartmental and consultant support, is in the process of soliciting proposals for a solar photovoltaic generating system to be located on City Airport property pursuant to a power purchase agreement where under the City will purchase power generated at a fixed price.

The Airport is securing renewable generation capacity by pursuing renewable electric generation contracts through a competitive process where the proposer will design, build, operate, and own the solar photovoltaic electric generating system and provide electricity sold to the Airport for an agreed upon unit cost and term via a Power Purchase Agreement (PPA). Staff is hopeful that this project will be installed and operational by December, 2008.

The Airport is aware of its large energy demands and has been investigating alternative energy sources. The Airport desires to improve energy efficiency and reduce dependence on traditional generation resources. The Airport established a goal for producing a minimum of 1MW of electricity with the use of solar photovoltaic (PV) electric generating systems, as a first step towards a renewable resource power generation facility.

Terminal A Modifications: The Terminal A Modifications project expands and remodels Terminal A. This project, which is utilizing PG&E Savings by Design technical assistance and rebates is at least 60% complete on design, and is under early construction work. Terminal A improvements and upgrades will maximize USGBC LEED criteria.

The Terminal Equity Project completes remodel in Terminal A not covered by the project above as well as Terminal A+ which the City recently acquired and the Baggage Claim Building. Design of this work has not yet started, but work on program verification is underway and energy audits of these areas will be conducted.

Ongoing energy efficiency activities are concentrating on lighting and motor upgrades. Airport staff is also exploring the potential for airfield lighting systems with LED technology, with an application for this technology as certification and industry experience progresses

Convention Center

The San Jose McEnery Convention Center has enrolled in PG&E's ClimateSmart™ program. 100% of Greenhouse Gases (GHG) emissions from the electricity usage at this facility is now offset through ClimateSmart. The ClimateSmart program provided the City with a voluntary option as a Pacific Gas and Electric Company customer to reduce our impact on climate change. PG&E calculated the amount needed to make the greenhouse gas emissions associated with the Convention Center's energy use "neutral" and has added this amount to our monthly energy bill.

100% of the payment for the ClimateSmart program goes to directly funding new greenhouse gas emission reduction projects in California. PG&E invests these funds in a range of innovative projects, such as projects that capture methane gas from dairy farms and landfills as well as conserving and restoring California's forests.

Green/Cool Roofs

An alternative to traditional roofing materials is a rooftop garden, or "green roof." On hot summer days, the surface temperature of a vegetated rooftop can be cooler than the air temperature, whereas the surface of a traditional rooftop can be up to 90°F (50°C) warmer.

The Department of Public Works is in the process of installing an extensive green roof at the new Police Substation building. The roof is 11,200 square feet and construction on this project began February 2008. This roofing option will provide the following benefits and is estimated to be complete in October 2009:

- Reduce urban heat islands by providing shade
- Reduce sewage system loads by assimilating large amounts of rainwater
- Absorb air pollution, store carbon and create beneficial habitat for wildlife
- Protect underlying roof material by eliminating exposure to the sun's ultraviolet radiation thus extending the life of the roof and
- Insulate the building from extreme temperatures, keeping the building interior cool in the summer and warmer in the winter reducing energy costs.

Small scale demonstration green roofs as well as a number of cool roofs will be included in the Community Development Block Grant Green Building project mentioned above.

Community Services

- **Low income energy program**

An agreement between the City and Calpine/Bechtel in 2003 provided $1M to be allocated to low-income San Jose residents for energy efficiency activities. In November 2004, Council approved a program that was leveraged with the City's Housing Department. The majority of the funds were for energy improvements for low income residents of San Jose with $15,000 reserved for education and outreach activities.

To date, the Housing Department has dispersed $889,052 of the $985,000 of the Calpine/Bechtel settlement funds through their rehabilitation program. It is anticipated that all of the funds will be allocated by the end of FY2007-08.

With these funds, the Housing Department served 178 Extremely Low-Income households (48% of funds), 135 Very Low-Income (37%), and 57 Low-Income households (15%). It is worth highlighting that of the 370 households assisted, 192 households, or 85% of the "Energy Saving" funds went to households earning at or below 50% or the area median household income.

Items purchased with these funds include:

- *Energy Star* refrigerators (67)
- Energy-efficient furnaces (139)
- *Energy Star* washing machines (76)
- *Energy Star* clothes dryers (41)
- Attic fans (6)
- Dual-pane windows where replacement was necessary (72)

This program has achieved the goals of improving the housing and living conditions of our low-income clientele while reducing the energy needs of our community.

Project and Program Funding

- **City Building Energy Projects Fund (CBEEP)**

Current funding allocations for energy efficiency improvements at City facilities included a one time funding allocation from 2004-05 funds and a 5-year appropriation in C&C Funds (Park and Fire) that will end in FY 2010-11. This amounts to a total of $154,683 that has been available for energy projects at City facilities. All rebates from PG&E for projects funded through the General Fund are returned to the CBEEP for use in the implementation of additional projects.

After implementing the initial projects, and even with the rebates being returned, funds available for additional energy projects would be very limited, and not proportional to potential savings. Phase II City energy projects have been identified, with a preliminary estimated cost of over $400,000, with annual energy cost savings of $112,000, and a rebate of $102,000 for a less than 3 year payback.

A number of investment grade energy audits will need to be established in collaboration with the Association of Bay Area Governments who is the entity that provides the City with no cost services to determine estimated project costs, energy savings and return on investment figures.

ESD and the Budget Office are proposing to conduct a five year project to return 1st year energy efficiency savings to the City Energy Efficiency Fund in order to expand the funds available for energy savings projects, in conjunction with expanded energy use data management system (PG&E and EPA Portfolio Manager) to ensure monitoring and evaluation of the energy improvements.

Improve Energy Reliability –
Energy Policy Goal II

California Regulatory and Legislative Activities: California is demanding a next generation of energy efficiency to meet its energy, environmental and economic goals to 2020 and beyond. The *California Energy Efficiency Strategic Plan*, being prepared by the State's utilities and to be approved by the California Public Utilities Commission, is the first step in a new, ongoing, statewide strategic planning effort. The objective of this effort is to define innovative new paths to aggressively deliver energy efficiency to homes, offices, factories, and farms—and to significantly contribute to the state's goal of having a reasonably priced, stable, reliable, and clean portfolio of energy resources.

The City has been actively participating in the development and goals for the *California Energy Efficiency Strategic Plan,* providing specific insights as to the role and opportunities of local governments in implementing the plan and ensuring a successful implementation.

Local, State and National Legislative activities: Council recently adopted the CleanTech policy guidelines and legislative priorities. These guidelines and priorities will help to achieve many of the goals as outlined in the Green Vision. Staff recently participated in a California Assembly Committee on Utilities and Commerce hearing on AB2466 (Laird).

This legislation recently passed the California Assembly Utilities and Commerce Committee. The bill authorizes a local governmental entity to take advantage of "aggregated net energy metering." AB 2466 would allow excess energy produced at City facilities to be credited to other facilities' utility services accounts. San Jose has a number of facilities with low energy demand and large amounts of land and/or roof space. The bill will encourage the development of renewable sources of energy by local agencies.

In addition, staff continues to monitor and participate as needed on the state and national level regarding transmission, permitting, funding and other key issues that would have an impact on San Jose.

Promote Collaboration –
Energy Policy Goal III

Silicon Valley Energy Watch Program—Local Government Partnership with PG&E

The San José/Silicon Valley Energy Watch program (SJ-SVEW) builds upon numerous fruitful partnerships between the City and Pacific Gas and Electric Company (PG&E). For 2006-2008,

San José is currently implementing the information-only Silicon Valley Energy Watch with PG&E, which delivers local energy efficiency classes independently and in collaboration with the Pacific Energy Center and Stockton Energy Training Center; provides combined marketing and educational services to support 3rd Party program implementers; assists with regional program coordination; and has contributed to municipal code, standard, and goal development.

The City recently received word that the City's proposed program for the 2009-11 term was selected by PG&E as an official Local Government Partnership. Detailed information on the proposed program is provided in Attachment A. Note that while PG&E has selected San Jose's proposal for a partnership in 2009-11, PG&E has not yet committed to any specific funding level, or to funding any specific element of the program. A detailed implementation plan, along with final budget allocations, is being prepared for submittal by PG&E to the California Public Utilities Commission CPUC) in mid-May. A final decision and allocation will be forthcoming from the CPUC in the fall, with program start in January of 2009.

Solar Partnerships: The City of San José has demonstrated its commitment and dedication to supporting innovation and the entrepreneurial spirit within our community through partnerships, economic incentives and workforce development assistance. These collaborative partnerships with entities such as the Tech Museum of Innovation have recently led to an agreement to install a 169Wp photovoltaic solar electric system on the Tech's roof which will be made accessible to the public through guided tours. Economic incentives and workforce development support has been provided to several solar manufacturers including Solopower and Nanosolar. The assistance from the City has helped these businesses identify and secure manufacturing sites, obtain equipment assistance funds and establish partnerships with the City's Work2future program in order to provide training assistance for current and future employees.

Solar Tech Partnership: The City has an active partnership program with *Solar Tech,* an innovative organization of leading solar industry manufacturers, integrators and installers, utilities and training organizations joined together in a collaborative effort to create a Solar Center of Excellence in Silicon Valley. Their purpose is to identify, prioritize and resolve technical and adoption barriers to solar technology by addressing issues of performance, processes, standards, and workforce readiness.

City of San José Global Warming/Climate Change Program: The City has worked with ICLEI—Local Governments for Sustainability—since March 26, 1991, when the City Council adopted a resolution to participate in the Urban CO2 Project. Since then the City has also worked with ICLEI on the Cities for Climate Protection campaign, and more recently on a regional effort with other local governments in Silicon Valley to form a Climate Protection Task Force.

Improve Air Quality & Reduce Greenhouse Gases –
Energy Policy Goal IV

- **Municipal Greenhouse Gas Reduction Policy**. In June of 2007, the Council adopted aggressive emission reduction goals for municipal activities. ESD has been working with other City departments to:
  - Evaluate the emission reduction potential of current programs and policies
  - Identify data collection gaps

- Develop collaborative City-wide reporting methodologies and strategies
- Identify additional emissions reducing activities, policies, or programs for possible adoption
- Document and coordinate with the Green Vision, Envision 2040, and other ongoing programs and projects

ESD's Office of Sustainability is member of ICLEI – Local Governments for Sustainability, the California Climate Action Registry (CCAR), and Sustainable Silicon Valley (SSV). ICLEI provides tools and software to support emissions data collection. Once City municipal emissions data have been independently verified according to CCAR guidelines, emissions reductions will be reported to both CCAR and SSV.

ESD has recently contracted with NSF-ISR for verification of the City's Greenhouse Gas inventory. NSF-ISR was principally involved in the development of international standards for validation and verification of greenhouse gas assertions (ISO 14064 & 14065) and is thoroughly familiar with and will be following the General Certification Protocol developed by the California Climate Action Registry.

- As reported earlier, the **City's energy reduction activities**, both behavioral and installations, have avoided energy cost expenditures of close to $30M since 2001. That translates to a 20.7% reduction compared to the established baseline, with over 237M kWh. This equates to 255,000 tons of of Carbon Dioxide Equivalent removed since 2001, equal to the removal of the annual greenhouse gas emissions from 46,600 passenger vehicles.
- **Collaboration with Bay Area Air Quality Management District's Spare the Air Program –** An ongoing program that provides alerts to City employees regarding spare the air days and opportunities to reduce emission reductions

Encourage the development and Use of Renewable Energy –
Energy Policy Goal V

- **Energy Generating Technologies That Use Municipal Solid Waste**

Several initiatives currently underway will drive staff analysis of options for sustainable energy production technologies. The City's Zero Waste Planning effort, the San Jose/Santa Clara Water Pollution Control Plant Master Plan, and the City's Sustainable Energy Action Plan are interconnected components of this initiative. Progress on these issues will continue to be provided to Council as each of these efforts matures.

In order to accomplish Goal #5 of the Green Vision, "Divert 100% of waste from landfill and convert waste to energy," the City conducted a Request for Information (RFI) process to obtain information about potential energy-generating technologies that use selected municipal solid waste (MSW) as a feedstock. The purpose of the RFI was to evaluate whether the idea of an energy recovery facility located on Plant lands merited moving forward with the next steps.

In addition, as part of the IWM Zero Waste planning process, IWM consultants are also evaluating any additional methods and technologies that are currently being promoted in the marketplace that would

be of interest to the City in making best use of discarded materials. The preliminary results of the March 2008 RFI review and additional consultant analysis suggest that gasification technologies and biological technologies and processes should be further explored. The Zero Waste Plan, due to be completed in December, will include an analysis of these various technologies and processes in relation to City waste reduction and energy goals, which could include a Request for Proposals (RFP) for an alternative technology energy facility to be located on Plant lands that uses selected streams of municipal solid waste (MSW). A brief review of these technologies is attached (Attachment B).

- **Department of Energy (DOE) Solar America Initiative—Solar Showcase.** In May of 2007, the City was awarded a Solar America Initiative—Solar Showcase Technical Assistance grant. The DOE TIGER technical assistance team was in San Jose from April 1-3, 2008 conducting site assessments at the selected City facilities in collaboration with ESD and other City staff. A technical report is expected within two-three months that would provide the City with:

  a) A determination of appropriate system size;

  b) The power production potential and annual energy savings estimate;

  c) A conceptual layout of the system(s);

  d) Cost estimates of conceptual design; and

  f) A life-cycle economic analysis and an evaluation of financing options.

  The facilities included:

  City of San Jose City Hall Employee Parking Garage

  San Jose Convention Center

  Central Service Yard (buildings, land and parking structures)

  HP Arena/Shark Tank

  San Jose Environmental Innovation Center (Las Plumas)

  Wastewater Pollution Control Plant

  Children's Discovery Museum

The Department of Energy will also be assisting the City developing procurement language to solicit solar system design and installation services and assist in the development of evaluation factors for source selection. If City elects to proceed with solar design and installation services, the DOE TIGER team would serve as technical advisor to the City during proposal reviews and contract negotiations with selected contractors, and provide guidance on system designs submitted by selected contractors.

- **Department of Energy (DOE) Solar America Initiative—Solar City Award.** On March 29, 2008, the City was informed that we were selected as a Solar America City with a grant award of $200,000. As stated in our proposal, becoming a Solar City will enable the City to build on the collaborations in place with *Solar Tech* and other key community stakeholders, and develop additional collaborations with business, educational and citizen partners throughout the community to develop and implement a long range plan for San Jose as a Solar City that will

- Develop and pilot local and regional financing, incentive and regulatory strategies to ensure that all elements of the community have effective opportunities to manufacture and install solar technologies;
- Develop and implement a coordinated outreach and education strategy to ensure that the community has the tools, resources, and workforce needed to increase the use of renewable energy.
- Identify strategies, opportunities and challenges that must be surmounted for the City to achieve the Green Vision goal of 100% electricity from renewable sources.

Staff is finalizing the contract agreement with DOE.

- ***Airport Solar Opportunities.*** As mentioned earlier in this report, the Airport has released a Request for Proposal for a Solar Power Purchase Agreement for solar on selected facilities and lands (April release).

- ***City facilities and lands—Solar Opportunities.*** In December 2007, staff presented a status report to the Transportation and Environment Committee that provided detail on actions being taken to assess the solar potential for other City facilities not included in the DOE Solar America Showcase—Technical Assistance Program. Those actions included securing a complete listing of City facilities and obtaining information regarding the facility's structural suitability, roof availability (no equipment currently on the roof preventing solar installations), current energy costs, long tern life of the building (is it scheduled for rehabilitation, etc.), size, location, and engineer's cost estimate for recommended solar project; and existing use agreement and restrictions.

  Information regarding these potential City sites, along with a listing of available parking areas for solar carport/shade structures has been obtained. Using the Airport's Solar Power Purchase Agreement as a template, staff is currently developing a RFP for a Power Purchase Agreement or other venue for those identified City facilities, parking garages and lots.

- ***Solar Financing for City Projects and the Community.*** In the December 2007 report to the Transportation and Environment Committee on City Solar activities, a compilation of financing options for solar projects was presented. Subsequent to that report, the following actions have occurred:
  - ***Power Purchase Agreement (PPA) Workshop:*** Staff sponsored and organized a comprehensive workshop on all aspects of PPA development and implementation. Presenters included experienced and knowledgeable representatives from the California Department of General Services Solar program, Pacific Gas and Electric, and the Tech Museum. Almost 100 City staff and Santa Clara County City representatives attended the workshop.
  - ***Berkeley Energy Financing District Presentation:*** Stephen Compagni Portis, the Director of Special Projects at the University of California at Berkeley's Renewable & Appropriate Energy Laboratory (RAEL) is working with the City of Berkeley on their proposed financing district, along with area bankers, lawyers, and financial advisors. Staff coordinated a working

group meeting in mid-April with Mr. Portis and key City staff regarding the options and opportunities for the City to establish a similar district.

- ***DOE Solar America City:*** Key staff involved in the City's solar activities (City Manager's Office, Finance Department, and Environmental Services) will be attending the first Solar America Cities Conference in mid-April. Specific workshops related to financing options for both municipal and community solar projects will be provided, and the knowledge gained from these workshops will help in the preparation of specific recommendations regarding financial options.

- ***Solar Opportunities for the Low Income Community.*** Two programs have recently been adopted and program implementation guidelines proposed that would provide solar resources for the low-income community:
  - California Solar Initiative (CSI) Single-Family Low-Income Incentive Program. On November 16, 2007, California Public Utilities Commission (CPUC) adopted an innovative $108 million dollar program provides incentives to low-income, single-family, owner-occupied homes. The goal of the Single-Family Low-Income Incentive Program is to provide low-income homeowners access to solar photovoltaic systems, to decrease electricity usage and reduce bills without increasing monthly expenses. At this time, the program is in the first stages of implementation and low-income solar incentives are not currently available.
  - The CSI Multifamily Low-Income Incentive Program. This program would provide incentives that substantially subsidize solar energy systems in multifamily housing and which, in combination with energy efficiency measures, will offset energy loads and provide economic benefits for both affordable housing developments and low income tenants.

  Both programs are in the design stage and the City is actively following developments for these programs and working to ensure that eligible San Jose residents, affordable housing developments and tenants are able to take advantage of these programs.

- ***Solar Renewable Energy Credits.***

At present, there are two options to provide renewable power to City facilities: The City may install renewable generation systems, such as solar panels, on or nearby City facilities. Alternately, we may purchase PG&E's standard mix of electricity (currently 13% renewable,[1]) then separately purchase the environmental benefits of renewable energy from a third party. The vehicle for this purchase is called a Renewable Energy Credit (REC.) Purchasing RECs helps to increase the market for renewable energy when the timing and substantial up-front capital costs of on-site renewable energy are not appropriate to the project. The City will purchase RECs to provide Camden Community Center with renewable energy, in support of the LEED certification of the facility.

[1] PG&E press release, May 10, 2007
http://www.pge.com/about/news/mediarelations/newsreleases/q2_2007/070510a.shtml

- ***Education and outreach.***
  - ***International Solar Cities Congress.*** In February 2008, the City was represented and information presented on San Jose's solar efforts to the International Solar Cities Congress in Adelaide, Australia. The Congress featured a diverse and inspiring program for more than 800 attendees and ninety speakers from 33 countries. The City was encouraged to apply to host the 2012 Congress, which is a bi-annual event.
  - ***Ongoing classes and Workshops.*** ESD has been actively promoting energy efficiency and solar opportunities through workshops sponsored through the PG&E Local Government Partnership (Silicon Valley Energy Watch), Earth Day activities, and jointly sponsored programs with the Library.
  - ***Go Green schools program and PG&E's Solar Schools.*** In March of 2008, PG&E announced the awardees for its 2008 Solar Schools program. Two of the awardees are currently a part of the City's "Go Green Schools" program. The PG&E Solar Schools Program includes installation of photovoltaic systems in public schools, a solar-based curriculum training package, workshops for teachers and "Bright Ideas" grants which support innovative solar science projects in classrooms. Each photovoltaic system generates 1.3 kilowatts of electricity, or enough to provide for the power needs of an entire classroom.
    - ***"Go Green"* Schools Receiving $25,000 Solar Generation Systems**
      - Hacienda Science/Environmental Magnet School
    - ***"Go Green"* Schools Receiving up to $5,000 in "Bright Ideas" Grants**
      - Hacienda Science/Environmental Magnet
      - Laneview Elementary School

ATTACHMENT A

City of San Jose 2009-11 Proposed Local Government Partnerships with PG&E

The objectives of the proposed 2009-11 **City of San José/Silicon Valley Energy Watch** program are to:

- Deliver cost-effective, persistent, and comprehensive energy savings, contributing to the realization of the following published goals:
  - *The San José Green Vision*, adopted by the San José City Council October 30, 2007;
  - *Big Bold Energy Efficiency Strategies*, adopted by California Public Utilities Commission October 18, 2007; and
  - Investor Owned Utilities' "*California Energy Efficiency Strategic Plan*" supplemented draft, March 6, 2008.
- Contribute to the development of persistent institutional capacity of local stakeholders (governments, industry and industry associations, non-governmental organizations, and neighborhood associations) for collaboration and service delivery to address two fundamental challenges to our region, state, nation, and planet:
  - Sustainable, reliable, and affordable energy resources
  - Climate change risk reduction
- Enhance delivery of energy efficiency services to underserved communities.
- Collaborate with governments (local as well as state and federal agencies), the California energy efficiency industry, academia, and local stakeholders to maximize program penetration.
- Continuously improve service delivery through ongoing measurement & verification.

The City has proposed the following program elements, targeting specific markets and service needs, which will complement and coordinate with PG&E's portfolio of offerings serving the proposed territory:

(1) Small Business & Non-Profit Direct Install Program Element: *Silicon Valley Energy Challenge*

This program element proposes to provide direct install of comprehensive lighting retrofits and vending machine controls, coupled with referral to HVAC tune-up and duct-sealing programs.

(2) Residential: Market-Rate Existing Single Family and Multifamily Program Module: *Neighborhood Energy Action*

The *Neighborhood Energy Action* residential mass market program element will couple community outreach, education, and social marketing with PG&E's residential energy efficiency rebates.

(3) Residential: Low/Moderate Income Existing Single Family and Multifamily Direct Install Program Module: *Energy Efficiency System of Care (EESOC)*

Energy Efficiency System of Care is proposed as a seamless augmentation to PG&E's Low Income Energy Efficiency program services delivered in the City of San José. The program element proposes to deliver the same services via the same vendors implementing the LIEE program in this area, but to expand income eligibility limits to better serve the unique local needs of our community.

(4) Education/Market Transformation/Marketing Coordination Program Element

Regional municipal support: SJ-SVEW will provide enhanced energy code development and enforcement training for code officials, tailored to fit their schedules, in conjunction with strategic partner Joint Venture Silicon Valley (JVSV) Climate Protection Taskforce.

Workforce development initiative: SJ-SVEW will coordinate and deliver lectures at local colleges and technical schools about energy technologies, policy, and incentives.

Educational enhancement to the Silicon Valley Energy Challenge, Neighborhood Energy Action, and EESOC: Compliance, persistence, and market transformation effects of the resource and incentive programs will be increased by coupling installed measures with education.

Residential program educational support: SJ-SVEW will deliver residential energy efficiency education and outreach to neighborhood association leaders, at community events, and as a complement to programs that serve large corporate campuses with substantial on-site staff

(5) Codes, Standards, and Municipal Capacity Building Program Element

SJ-SVEW will support energy efficiency Codes & Standards development across Santa Clara County, building the expertise and capacity among local governments and organizations to be energy leaders for their communities.

(6) Municipal Facilities Program Element

San José is committed to the improved environmental sustainability and the performance of municipal facilities and infrastructure.

Through subcontractors hired by the City, local government facilities will receive free audits, reports identifying recommended energy efficiency improvements, summaries of rebates available for the listed improvements, sustained technical support, and energy efficiency project management.

(7) Local Government Residential New Construction Innovation: *Carbon Free Future*

This innovative program element proposes utilizing local governments as green building incentive program partners.

(8) Evaluation, Measurement, & Verification Program Element

ATTACHMENT B

ENERGY GENERATING TECHNOLOGIES THAT USE MUNICIPAL SOLID WASTE

Several initiatives currently underway will drive staff analysis of options for sustainable energy production technologies. The City's Zero Waste Planning effort, the San Jose/Santa Clara Water Pollution Control Plant Master Plan, and the City's Sustainable Energy Action Plan are interconnected components of this initiative. Progress on these issues will continue to be provided to Council as each of these efforts matures, and could include a Request for Proposals (RFP) for an alternative technology energy facility to be located on Plant lands that uses selected streams of municipal solid waste (MSW).

Alternative Technology Energy Facility – Request for Information (RFI)

In order to accomplish Goal #5 of the Green Vision, "Divert 100% of waste from landfill and convert waste to energy," the City conducted a Request for Information (RFI) process to obtain information about potential energy-generating technologies that use selected municipal solid waste (MSW) as a feedstock. The purpose of the RFI was to evaluate whether the idea of an energy recovery facility located on Plant lands merited moving forward with the next steps. The potential portions of MSW that would be appropriate as feedstock for these technologies are essentially the residue after every possible reuse, recycling, and composting effort has been utilized.

Although the City received nine (9) responses in early March 2008 through the RFI process, only seven (7) of these responses focused on converting MSW to energy, and six (6) of these used only one type of conversion process: Thermal Processing or "gasification". A gasification process converts the organic fraction of the waste to a uniform gaseous fuel through the application of heat. A diesel or gas turbine can use this fuel gas to generate electricity; alternatively it can be used to manufacture industrial chemicals such as methanol or ethanol. None of the Respondent technologies are currently in operation in the United States utilizing MSW as the feedstock. Only one of the Respondents is operating a commercial facility overseas. However, based on the evaluation of the information obtained through the RFI process and other public sources, it was concluded that alternative energy technologies and a possible RFP process should continue to be a component of the City's Zero Waste planning efforts as well as a potential alternative to dispose of biosolids from the Plant.

In general, alternative technologies to convert MSW into energy can be grouped into five (5) separate categories:

- Thermal Processing ("gasification") as discussed above including plasma gasification, and pyrolysis technologies;
- Biological Processing, including anaerobic digestion and MSW composting;
- Hydrolysis converting the cellulose fraction of MSW (e.g. paper, food waste, yard waste) to produce ethanol or other products;
- Mechanical Processing employing physical processes such as autoclaving primarily to recover recyclables and separate the organic and inorganic fractions of MSW; these processes are typically followed by another conversion process; and

- Chemical Processing using a combination of chemical means such as catalysts, depolymerization, etc. to convert MSW into useful products and energy; (it should be noted that the only other MSW RFI response was from a chemical processing vendor, however not enough information was provided to assess the technology appropriately).

At this time, only Thermal Processing and Biological Processing technologies have been built to commercial scale, and they are currently operating outside the U.S., primarily in Japan. Hydrolysis, Mechanical Processing and Chemical Processing technologies appear to be promising approaches to convert MSW to energy, however to date, no commercial-scale facilities with a proven operational history exist in the U.S. Therefore, at this time the City should monitor these three (3) groups of technologies as they develop for potential future endeavors if the timing is appropriate.

The only commercial-scale technology that the City did not garner a response from during the RFI process was from Biological Processing technologies for mixed MSW in specialized anaerobic digestion technologies. Some currently operating facilities are designed to accept the entire MSW stream (pre-sorted or not), including a portion of biosolids. This differs from the current discussions at the Plant revolving around upgrading existing digesters and specifically using a pre-sorted portion of organic material (discussed more below). Biological methods digest the biodegradable organic portion of the MSW to produce a biogas and a solid by-product. Similar to "gasification," the City should consider Biological Processing technologies.

Use of Plant Facilities for Food Waste Processing

As mentioned above, the Plant has recently initiated the development of a Plant Master Plan that will guide the replacement, rehabilitation, and improvements of the facility for the future. Among the various options the Plant Master Planning Team is exploring, is the use of renewable energy production with a goal of becoming energy self-sufficient. Specifically, efforts are underway to explore the use of the Plant's existing anaerobic digesters to convert food wastes and fats, oils, and grease to energy. These waste streams have the potential to produce natural gases thereby offsetting the City's need for purchasing natural gas. Similar programs are currently being developed by the East Bay Municipal Utility District, located in Oakland. Progress on this issue will be reported to the Council as the Plant Master Plan and Zero Waste Plan efforts progress.

Commercial Waste Collection

The IWM Division's Commercial Collection System Evaluation Team is actively comparing program enhancement options for commercial garbage and recycling collection to bring to Council. Awareness of the options for a variety of energy generation opportunities is allowing the City to integrate energy generation goals into the criteria used for evaluating certain separated commercial waste streams such as food wastes, fats, oils and grease. The Evaluation Team is also aware of isolating other waste streams where opportunities of directing these streams to an emerging conversion technology power generation facility could be possible.